

Attorney Docket No.: U0003/7002 (formerly 8830-8)
 Filed: January 8, 2002
 Amendment and Reply

U.S. App. No. 09/937,687
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The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application:

Listing of The Claims:

- 1-22. (Canceled)
23. (New) A peptide analogue of GIP(1-42) comprising at least 15 amino acid residues from the N-terminal end of GIP (1-42), the analogue containing exactly one amino acid substitution or modification at positions 1, 2 and 3, with the proviso that the modification is not glycation of the tyrosine residue at position 1.
24. (New) A peptide analogue as claimed in claim 23, wherein the amino acid modification is selected from the group consisting of:
 - (a) N-terminal alkylation;
 - (b) N-terminal acetylation;
 - (c) N-terminal acylation;
 - (d) The addition of an N-terminal isopropyl group; and
 - (e) The addition of an N-terminal pyroglutamic acid.
25. (New) The peptide analogue as claimed in claim 23, wherein the amino acid substitution is selected from the group consisting of:
 - (a) D-amino acid substitution in position 1;
 - (b) D-amino acid substitution in position 2; and
 - (c) D-amino acid substitution in position 3.
26. (New) A peptide analogue as claimed in claim 23, where the amino acid in the 2 or 3 position is substituted by lysine, serine, 4-amino butyric acid (Abu), amino isobutyric acid (Aib), sarcosine or proline.

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27. (New) A peptide analogue as claimed in claims 23-26, further comprising an additional modification by fatty acid addition at an epsilon amino group of at least one lysine residue.
28. (New); The peptide analogue as claimed in claim 27, where the lysine residue is chosen from the group consisting of Lys¹⁶, Lys³⁰, Lys³², Lys³³ and Lys³⁷.
29. (New) A pharmaceutical composition comprising the peptide analogue of claim 23.
30. (New) A pharmaceutical composition of claim 29, further comprising a pharmaceutically acceptable excipient.
31. (New) A pharmaceutical composition comprising the peptide analogue of claim 24.
32. (New) A pharmaceutical composition of claim 31, further comprising a pharmaceutically acceptable excipient.
33. (New) A pharmaceutical composition comprising the peptide analogue of claim 25.
34. (New) A pharmaceutical composition of claim 33, further comprising a pharmaceutically acceptable excipient.
35. (New) A pharmaceutical composition comprising the peptide analogue of claim 26.
36. (New) A pharmaceutical composition of claim 35, further comprising a pharmaceutically acceptable excipient.
37. (New) A pharmaceutical composition comprising the peptide analogue of claim 27.

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38. (New) A pharmaceutical composition of claim 37, further comprising a pharmaceutically acceptable excipient.
39. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 23.
40. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 24.
41. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 25.
42. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 26.
43. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 27.
44. (New) A method of N-terminally modifying GIP or analogues thereof, the method comprising the steps of (a) synthesizing a GIP peptide from the C-terminal to the penultimate N-terminal amino acid, (b) providing tyrosine as a F-moc protected Tyr(tBu)-Wang resin, deprotecting the N-terminus of the tyrosine and reacting with modifying agent, allowing the reaction to proceed to completion, cleaving the modified tyrosine from the Wang resin to produce a free modified tyrosine and (c) adding the free modified tyrosine to the N-terminus of the synthesized peptide of (a).
45. (New) A method as claimed in claim 44 wherein the modifying agent is chosen from the group consisting of: glucose, acetic anhydride and pyroglutamic acid.

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46. (New) A peptide analogue of GIP(1-42) comprising at least 15 amino acid residues from the N-terminal end of GIP (1-42), the analogue containing one or more amino acid substitutions or modifications at positions 1, 2 and 3, with the proviso that the modification is not glycation of the tyrosine residue at position 1, and with the further proviso that if the amino acid at position 1 is modified or substituted it is modified or substituted by:
 - (a) N-terminal alkylation;
 - (b) N-terminal acetylation;
 - (c) N-terminal acylation;
 - (d) The addition of an N-terminal isopropyl group;
 - (e) The addition of an N-terminal pyroglutamic acid;
 - (f) D-amino acid substitution in position 1;
 - (g) D-amino acid substitution in position 2; and
 - (h) D-amino acid substitution in position 3.
47. (New) A peptide analogue as claimed in claim 46, where the amino acid in the 2 or 3 position is substituted by lysine, serine, 4-amino butyric acid (Abu), amino isobutyric acid (Aib), sarcosine or proline.
48. (New) A peptide analogue as claimed in claims 46, further comprising an additional modification by fatty acid addition at an epsilon amino group of at least one lysine residue.
49. (New) A pharmaceutical composition comprising the peptide analogue of claim 46.
50. (New) A method for treating diabetes, comprising administering to an individual in need of such treatment an effective amount of the peptide analogue of claim 46.